NAME: DATE:

Unit-2 Mastery Assessment (version 632)

Question 1 (10 points)

Let f represent a function. If $f[48] = 14$, then there exists a knowable solution to the equation below.

$$y = \frac{f\left[\frac{x}{22} + 46\right] + 43}{3}$$

Find the solution.

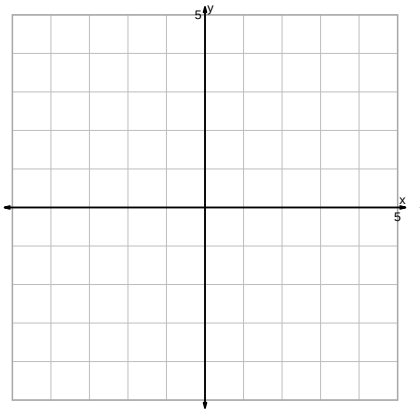
$x =$

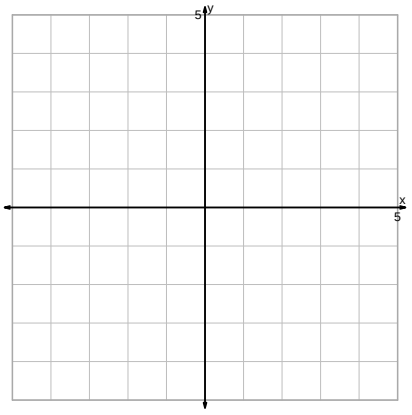
$y =$

Question 2 (20 points)

Graph the equations accurately. For each integer-integer point on the parent, indicate the corresponding point precisely. Also, with dashed lines, indicate any asymptotes.

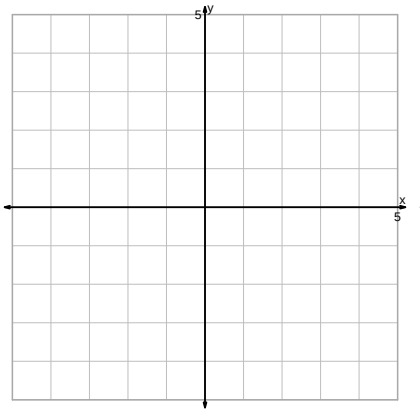
$y = \frac{\log_2(x)}{2}$

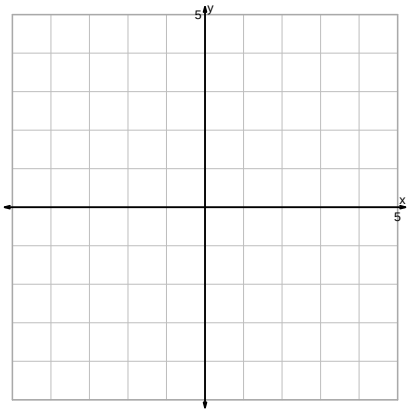




$y = 2 \cdot x^2$

$y = (x-2)^2$

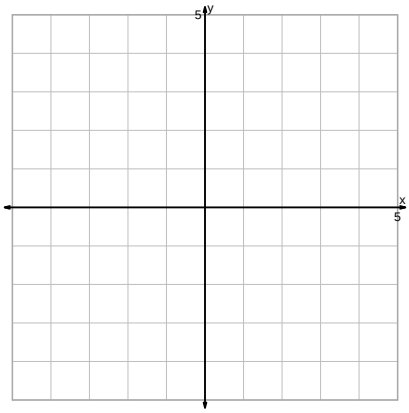


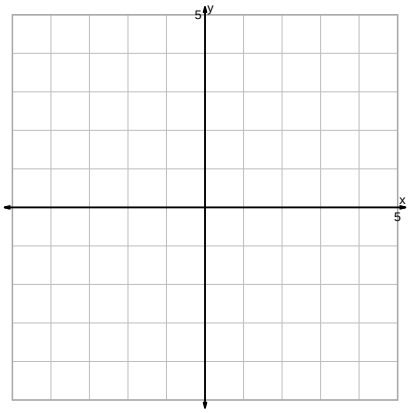


$y = 2^x + 2$

Question 2 continued...

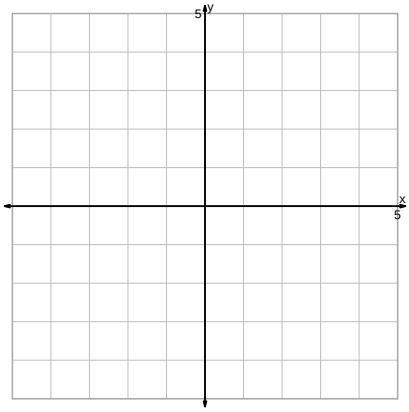
$y = \sqrt[3]{\frac{x}{2}}$

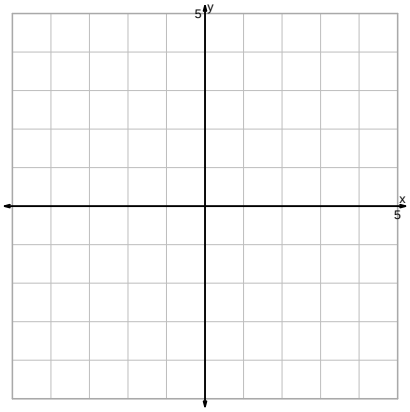




$y = 2^{-x}$

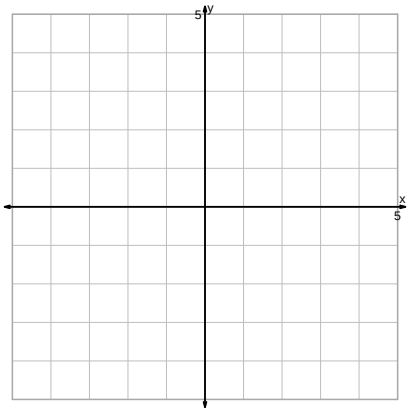
$y = \left(2x\right)^3$

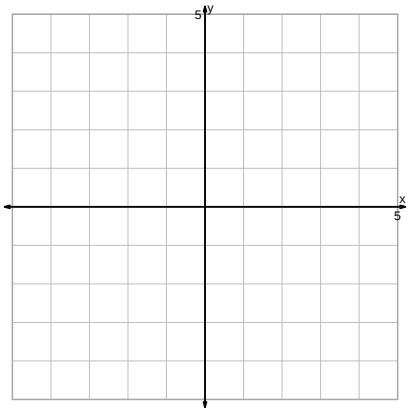




$y = -\log_2\left(x\right)$

$y = \sqrt[3]{x+2}$

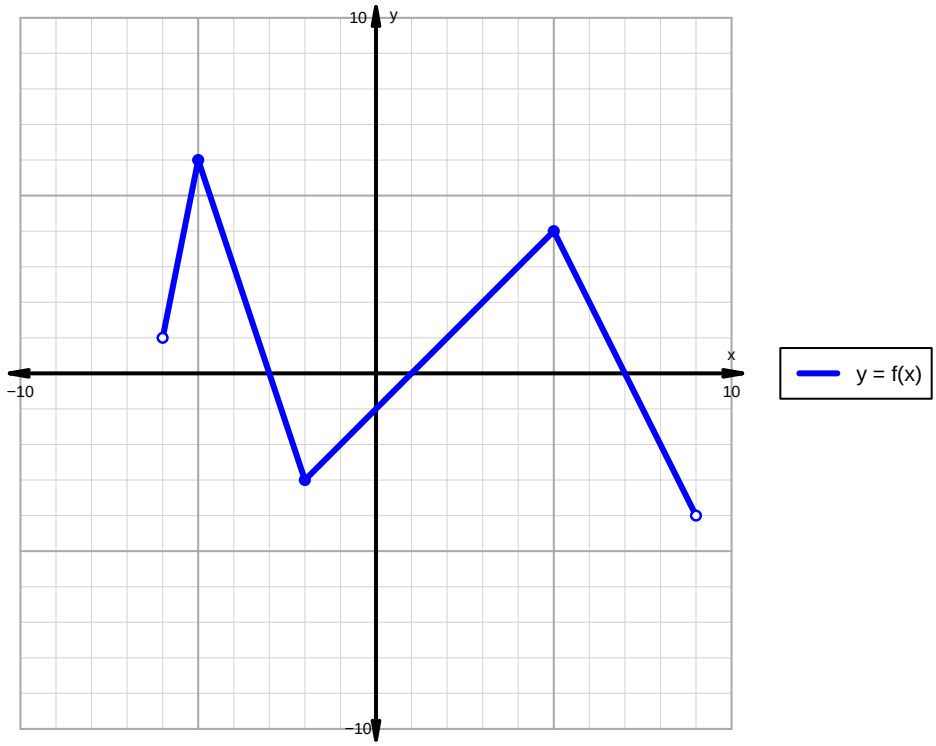




$y = \sqrt{x} - 2$

Question 3 (20 points)

A function is graphed below.



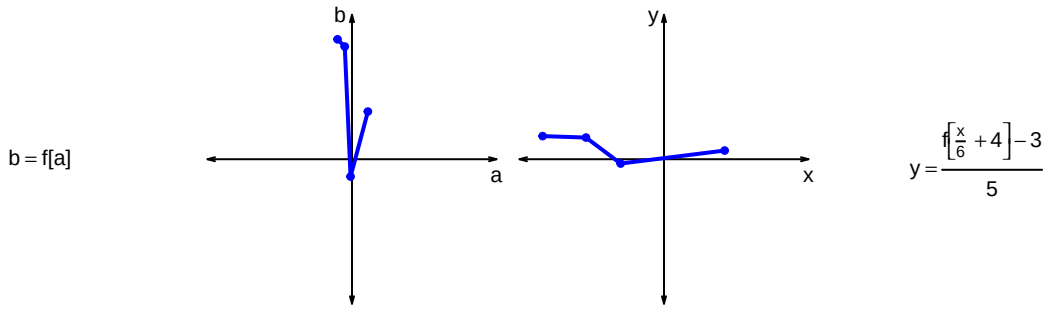
Indicate the following intervals using interval notation.

Feature	Where
Positive	
Negative	
Increasing	
Decreasing	
Domain	
Range	

Question 4 (20 points)

Let f represent a function. The curves $b = f[a]$ and $y = \frac{f\left[\frac{x}{6}+4\right]-3}{5}$ are represented below in a table and on graphs.

a	b	x	y
-10	83	-84	16
-5	78	-54	15
-1	-12	-30	-3
11	33	42	6



a. Write formulas for calculating x from a and calculating y from b. (Or, write the coordinate transformation formula.)

b. What geometric transformations (using words like translation, stretch, and shrink), and in what order, would transform the first curve $y = f[x]$ into the second curve $y = \frac{f\left[\frac{x}{6}+4\right]-3}{5}$?

Question 5 (10 points)

A parent square-root function is transformed in the following ways:

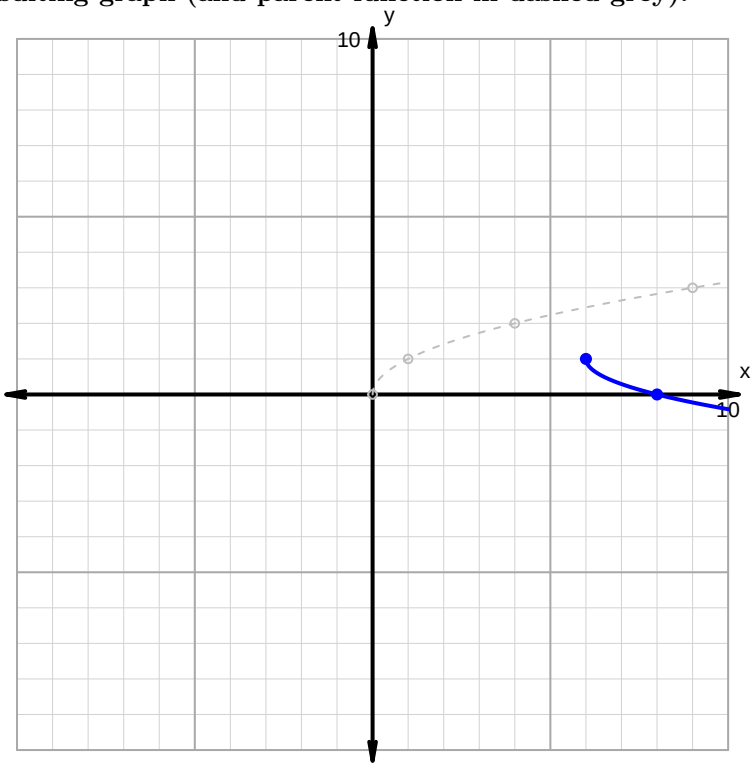
Horizontal transformations

1. Translate right by distance 3.
2. Horizontal stretch by factor 2.

Vertical transformations

1. Translate down by distance 1.
2. Vertical reflection over x axis.

Resulting graph (and parent function in dashed grey):

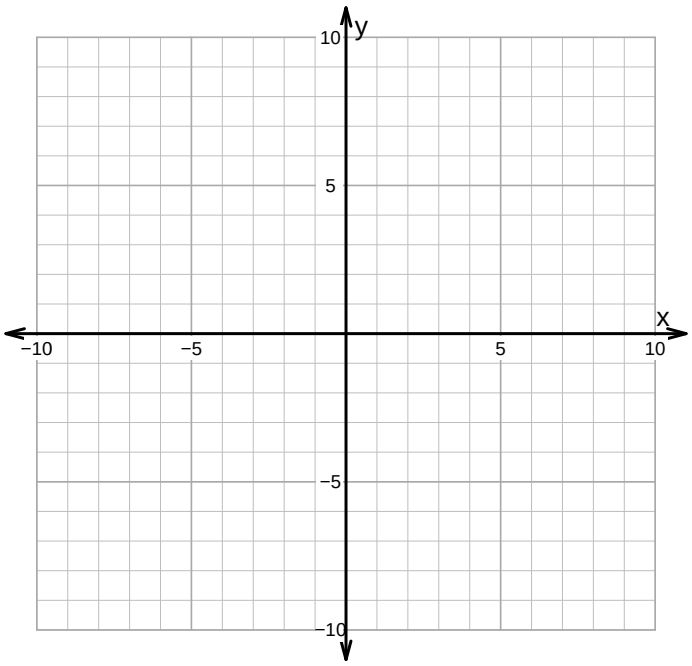


- What is the equation for the curve shown above?

Question 6 (20 points)

Make an accurate graph, and describe locations of features.

$$y = \frac{-1}{2} \cdot |x - 1| + 3$$



Feature	Where
Domain	
Range	
Positive	
Negative	
Increasing	
Decreasing	